



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,318	10/31/2003	Jon Irvin Stuckey	P02073US2ABFNT	9814
48985	7590	02/03/2010	EXAMINER	
BRIDGESTONE AMERICAS, INC. 1200 FIRESTONE PARKWAY AKRON, OH 44317			GUILL, RUSSELL L	
			ART UNIT	PAPER NUMBER
			2123	
			NOTIFICATION DATE	DELIVERY MODE
			02/03/2010	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

iplawpat@bfusa.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/698,318	<b>Applicant(s)</b> STUCKEY, JON IRVIN	
	<b>Examiner</b> Russ Guill	<b>Art Unit</b> 2123	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14, 21, 22 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21, 22 and 25-28 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/25/2010</u> .                                               | 6) <input type="checkbox"/> Other: _____                          |

#### DETAILED ACTION

1. This Office Action is in response to an Amendment filed November 4, 2009. No claims were canceled or added. Claims 1 – 14, 21 – 22 and 25 – 28 are pending and have been examined. Claims 1 – 14 have been rejected. **Claims 21 – 22 and 25 – 28 are allowable over the prior art of record.**
2. As previously recited, the Examiner would like to thank the Applicant for the well presented response. The Examiner appreciates the effort to carefully analyze the Office Action, and make appropriate and clear arguments and amendments.

#### *Response to Remarks*

3. Regarding claims 1 – 14, 21 – 22 and 25 – 28 rejected under 35 USC § 101:
  - a. Applicant's arguments have been fully considered, and are persuasive.
4. Regarding claim 1 rejected under 35 USC § 103:
  - a. Applicant's arguments have been fully considered, but are not persuasive, as discussed below.
  - b. The Applicant essentially argues that Sekula will, from time to time, create results with poor modulation characteristics, but claim 1 will not create results with poor modulation characteristics because claim 1 requires these characteristics to be non-randomly selected as well as requiring the first and second modulation orders to be smaller than or equal to the amplitude of the third modulation order.

Art Unit: 2123

i. The Examiner respectfully replies: While the Examiner appreciates the Applicant's arguments, the Examiner respectfully notes that Sekula appears to teach the non-randomly selecting the characteristics (Sekula teaches using any pre-selected periodic audio frequency spectrum instead of white-noise (*for example, see column 3, lines 19 - 24*), which is non-random), and Kogure appears to teach the first and second modulation orders to be smaller than or equal to the amplitude of the third modulation order (*figure 9, graph of B6*). Accordingly, the rejection is maintained.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1 - 2, 6 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekula (U.S. Patent Number 4,442,499) in view of Kogure (U.S. Patent Number 5,383,506).

- a. The art of Sekula is directed to a method for producing pneumatic tires having pre-selected noise characteristics (Title and Abstract).
- b. The art of Kogure is directed to the art of pneumatic tires having reduced noise (Title and Abstract).
- c. The art of Sekula and the art of Kogure are analogous art because they both contain the art of noise reduction for pneumatic tires.

d. Regarding claim 1:

e. Sekula appears to teach:

- i. selecting at least a first, a second, and a third modulation order (figure 1, element 11, and figure 2A, spectral amplitudes and frequencies; it would have been obvious that at least three modulation orders were produced, especially in light of Kogure, figure 9);
- ii. non-randomly selecting the amplitude for each of the selected modulation orders; ~~the amplitudes of the first modulation and second modulation orders being smaller than or equal to the amplitude of the third modulation order~~ (figure 1, element 11, and figure 2A; it would have been obvious that element 11 produced an amplitude of a modulation order; and figure 4; and column 2, lines 19 – 30; and column 4, lines 31 – 55; and column 10, lines 50 – 67);
- iii. non-randomly selecting the phase for each of the selected modulation orders (figure 1, element 12; it would have been obvious that element 11 produced a phase of a modulation order because in order for element 12 to sum the periodic functions cosine/sine, it would have required a phase; and figure 4; and column 2, lines 19 – 30; and column 4, lines 31 – 55; and column 10, lines 50 – 67);
- iv. creating a function for each modulation order that includes the defined amplitude and phase of the modulation order (figure 1, element 12; it would have been obvious that element 12 produced a cosine and/or sine function for each modulation order; and figure 4; and column 2, lines 25 – 30; and column 4, lines 31 – 55; and column 10, lines 50 – 67);
- v. summing the created functions for each modulation order to define a summation of the functions (figure 1, element 12; it would have been obvious that element 12 produced a wave that was the sum of the functions; and column 2, lines 20 – 25; and column 4, lines 31 – 55; and column 10, lines 50 – 67);

Art Unit: 2123

- vi. defining a tire noise pitch sequence from the summation of the functions (column 2, lines 35 – 55; and column 10, lines 50 - 67);
  - vii. Arranging tread lugs on a tire tread of a pneumatic tire to match the tire noise pitch sequence (figure 3).
- f. Sekula does not specifically teach:
- i. ~~selecting the amplitude for each of the selected modulation orders~~; the amplitudes of the first modulation and second modulation orders being smaller than or equal to the amplitude of the third modulation order;
- g. Kogure appears to teach:
- i. the amplitudes of the first modulation and second modulation orders being smaller than or equal to the amplitude of the third modulation order (figure 9, graph of B6);
- h. The motivation to use the art of Kogure with the art of Sekula would have been the benefit recited in Kogure that the invention provides a pneumatic tire improved in comfort through an improved pitch arrangement to reduce pulsation sound pressure level (column 3, lines 5 - 14).
- i. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Kogure with the art of Sekula to produce the invention of claim 1.
- j. Regarding **claim 2**:
- k. Sekula appears to teach:
- i. calculating a determined number of pitch sizes from the summation of the functions (column 2, lines 15 – 55; and column 10, lines 50 - 67).

l. Regarding **claim 6**:

m. Sekula does not specifically teach:

- i. selecting a total number of pitches, a number of different pitch sizes, and pitch ratios; and fitting the determined number of pitch sizes to the selected number of pitch sizes.

n. Kogure appears to teach:

- i. selecting a total number of pitches, a number of different pitch sizes, and pitch ratios; and fitting the determined number of pitch sizes to the selected number of pitch sizes (column 3, lines 5 – 45).

o. Regarding **claim 11**:

p. Sekula does not specifically teach:

- i. selecting between 3 and 7 modulation orders.

q. Kogure appears to teach:

- i. selecting between 3 and 7 modulation orders (column 3, lines 5 – 45; and figure 9).

7. **Claims 3 – 5, 7 – 10 and 12 – 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekula as modified by Kogure as applied to **claims 1 – 2, 6 and 11** above, further in view of Stuckey (U.S. Patent Application 2003/0040886).

a. Sekula as modified by Kogure teaches a method for designing a tire noise pitch sequence as recited in **claims 1 – 2, 6 and 11** above.

b. The art of Stuckey is directed to the art of analyzing tire tread patterns for tire noise.

c. Regarding **claim 3**:

d. Sekula does not specifically teach:

- i. using the accumulation of the deviation of the arc length from the arc length of the mean pitch size.

Art Unit: 2123

e. Stuckey appears to teach:

i. using the accumulation of the deviation of the arc length from the arc length of the mean pitch size (paragraphs [0031] – [0039]).

f. The motivation to use the art of Stuckey with the art of Sekula as modified by Kogure would have been the benefit recited in Stuckey that the invention allows eliminating tire designs having undesirable tire noise before sample tires are produced (paragraph [0026]).

g. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Stuckey with the art of Sekula as modified by Kogure produce the invention of claim 3.

h. Regarding **claim 4**:

i. Sekula does not specifically teach:

i. interpolating a curve defined by the accumulation of the deviation of the arc length from the arc length of the mean pitch size.

j. Stuckey appears to teach:

i. interpolating a curve defined by the accumulation of the deviation of the arc length from the arc length of the mean pitch size (paragraphs [0031] – [0039]).

k. Regarding **claim 5**:

l. Sekula does not specifically teach:

i. selecting a total number of pitches, a number of different pitch sizes, and pitch ratios; and fitting the determined number of pitch sizes to the selected number of pitch sizes.

m. Kogure appears to teach:



Art Unit: 2123

- i. selecting a total number of pitches, a number of different pitch sizes, and pitch ratios; and fitting the determined number of pitch sizes to the selected number of pitch sizes (column 3, lines 5 – 45).
- n. Regarding **claim 7**:
- o. Sekula does not specifically teach:
  - i. setting the selected number of pitch sizes to a number between 3 and 7.
- p. Kogure appears to teach:
  - i. setting the selected number of pitch sizes to a number between 3 and 7 (column 3, lines 35 – 40).
- q. Regarding **claim 8**:
- r. Sekula does not specifically teach:
  - i. identifying the range of determined number of pitch sizes and evenly dividing the identified range by the selected number of pitch sizes.
- s. Stuckey appears to teach:
  - i. identifying the range of determined number of pitch sizes and evenly dividing the identified range by the selected number of pitch sizes (paragraph [0040]).
- t. Regarding **claim 9**:
- u. Sekula does not specifically teach:
  - i. selecting the number of different pitch sizes to be 5 and selecting the pitch ratios to be 1.00, 1.10, 1.25, 1.40, and 1.50.
- v. Kogure appears to teach:
  - i. selecting the number of different pitch sizes to be 5 and selecting the pitch ratios to be 1.00, 1.10, 1.25, 1.40, and 1.50 (column 3, lines 5 – 45).

Art Unit: 2123

w. Regarding **claim 10**:

x. Sekula does not specifically teach:

- i. selecting the number of different pitch sizes to be 3 and selecting the pitch ratios to be 1.00, 1.25, and 1.50.

y. Kogure appears to teach:

- i. selecting the number of different pitch sizes to be 3 and selecting the pitch ratios to be 1.00, 1.25, and 1.50 (column 3, lines 5 – 45).

z. Regarding **claim 12**:

aa. Sekula does not specifically teach:

- i. defining the amplitudes of the first and second modulation orders to be smaller than the amplitudes of the remaining selected modulation orders.

bb. Stuckey appears to teach:

- i. defining the amplitudes of the first and second modulation orders to be smaller than the amplitudes of the remaining selected modulation orders (figure 2D).

cc. Regarding **claim 13**:

dd. Sekula does not specifically teach:

- i. defining the amplitudes of the first and second modulation orders to be zero.

ee. Stuckey appears to teach:

- i. defining the amplitudes of the first and second modulation orders to be zero (figure 2D).

ff. Regarding **claim 14**:

gg. Sekula does not specifically teach:

- i. varying the amplitudes for the selected modulation orders.

hh. Stuckey appears to teach:

- i. varying the amplitudes for the selected modulation orders (figure 2D).

8. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the Applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. The entire reference is considered to provide disclosure relating to the claimed invention.

*Allowable Subject Matter*

9. Claims 21 - 22, 25 - 28 are allowable over the prior art of record.

10. The following is a statement of reasons for the indication of allowable subject matter:

11. While Sekula (U.S. Patent Number 4442499) teaches defining an amplitude for each of the selected modulation orders; defining a phase for each selected modulation order; creating a function for each modulation order that includes the defined amplitude and phase of the modulation order; summing the created functions for each modulation order to create a wave Y having a curve; solving the equation to obtain a unique set of pitch sizes; arranging tread lugs on a tire tread of a pneumatic tire to match the tire noise pitch sequence; and Kogure (U.S. Patent Number 5383506) teaches selecting three, four, five, six or seven modulation orders; and Stuckey (U.S. Patent Application Publication 2003/0040886) teaches defining a lug stiffness variation curve (Di) to be the accumulation of the deviation of the arc length from the arc length of the mean pitch

Art Unit: 2123

size; none of these references taken either alone or in combination with the prior art of record teaches a method of forming a tire tread having a tire noise pitch sequence for a pneumatic tire, specifically including:

- a. Regarding claim 21, “setting the lug stiffness variation curve equal to the curve of the Y wave to define an equation”, in combination with the remaining features and elements of the claimed invention.

### *Conclusion*

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russ Guill whose telephone number is (571)272-7955. The examiner can normally be reached on Monday – Friday 9:30 AM – 6:00 PM.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Paul Rodriguez can be reached on 571-272-375353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

Art Unit: 2123

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Russ Guill  
Examiner  
Art Unit 2123

RG

/Paul L Rodriguez/

Supervisory Patent Examiner, Art Unit 2123